C-15. LOCKOUT/TAGOUT

I. PURPOSE

To establish the minimum requirements for the lockout or tagout of energy isolating devices. This procedure will be used to ensure that the machine or equipment is isolated from all potentially hazardous energy, and locked out or tagged out before employees perform any servicing or maintenance activities where the unexpected energization, start-up, or release of stored energy could cause injury.

II. DEFINITIONS

Affected employee. An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee. A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

Capable of being locked out. An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized. Connected to an energy source or containing residual or stored energy.

Energy isolating device. A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker, a disconnect switch, a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated

independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Energy source. Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hot tap. A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockout. The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device. A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

Normal production operations. The utilization of a machine or equipment to perform its intended production function.

Qualified person. An employee who has training in avoiding the electrical hazards of working on or near exposed energized circuits.

Servicing and/or maintenance. Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Setting up. Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout. The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device. A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

III. RESPONSIBILITIES

A. Facilities Maintenance and Engineering (FME)

1. Obtain and make available to employees locks, tags, chains, wedges, key locks, adaptor pins, self locking fasteners, or other hardware for isolating, securing or blocking of machines or equipment from energy sources.

2. Maintain and document energy control procedures.

3. Notify EHS of changes in employees job assignments that would necessitate retraining on lockout/tagout.

4. Coordinate lockout/tagout procedures with outside personnel (contractors, etc.).

B. Employee

1. Comply with the procedures described herein.

2. Be completely familiar with the Lockout/Tagout procedures.

C. Environment, Health and Safety Program (EHS)

1. Train affected employees on the following subjects:

a. Recognition of applicable hazardous energy sources;

b. Purpose and use of the lockout/tagout procedure;

c. Specific procedural steps for shutting down, isolating, blocking, and securing machines or equipment to control hazardous energy;

d. Specific procedural steps for the placement, removal and transfer of lockout devices or tagout devices and the responsibility for them;

e. Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures;

f. Tags, their limitations, removal authorization, precise wording, and secure attachment with cable ties;

g. All other employees affected by the lockout/tagout procedure need training on the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

h. Retrain affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that pose a new hazard, or when there is a change in the lockout/tagout procedure.

i. Maintain training records, including: names of employees trained, name of instructor, time and date of training, and course content.

j. Conduct a periodic inspection of the energy control procedure at least annually.

IV. GENERAL

A. The Lockout/Tagout Procedure addresses the servicing and maintenance of machines and equipment in which the unexpected energization or startup of the machines or equipment or release of stored energy could cause injury to employees.

The procedure does not address:

Normal operations (i.e., the utilization of the machine or equipment to perform its intended function), unless it is necessary to remove or bypass a guard or safety device/interlock.

Work on machines or equipment which is controlled by unplugging of the machines or equipment from the energy source and the plug is under the exclusive control of the employee performing the servicing or maintenance.

V. SEQUENCE OF LOCKOUT/TAGOUT PROCEDURES

A. Prepare for Shutdown.

1. Determine what kind of energy powers the system that is to be shutdown? (Electrical, hydraulic, pneumatic, etc.)

2. Determine if more than one type of energy is involved?

3. Determine the hazards and how should they be controlled.

B. Shut Down the Equipment

1. Use the normal stopping procedure (turn switch to off, press a button, etc.)

2. More complex procedures may be required.

C. Isolate the Equipment

1. Close valves, throw main disconnects, throw circuit breakers.

2. Disconnect or cap any auxiliary power sources such as secondary electrical, steam, hydraulic, or pneumatic systems.

D. Apply the LOTO Devices

Attach a lock or tag to the energy isolating device to prevent the restoration of energy. *Do this at all disconnect switches, valves, and other energy-isolating devices.*

***Workers should have their own individually assigned locks and keys. There should only be one key for each lock. If a master key is kept, it should be reserved for special circumstances and under supervisory control. The worker who applies the lock should remove the lock.

E. Control/Render Safe All Stored or Residual Energy

1. Relieve, disconnect or restrain any residual hazardous energy that could be present, including trapped pressure.

2. Check that all moving parts have stopped turning.

3. Blank pipe flanges.

4. Install ground wires to discharge electrical capacitors and static buildup.

5. Block or support elevated equipment.

F. Verify Isolation of Equipment

1. The employee must make sure that equipment will not run before beginning work.

2. Warn employees and make sure everyone is clear of the lockout area.

3. Test to make sure the right system has been locked out and cannot be operated.

4. Press all start buttons or other activating controls; return them to the off position.

5. Be sure to verify isolation (by observation) periodically until service or maintenance is complete.

6. The service or maintenance on this machine or equipment can now be performed.

VI. RESTORING MACHINES OR EQUIPMENT TO NORMAL OPERATION

A. After servicing and/or maintenance is complete and equipment is ready for normal operation, check the area around the machine or equipment to ensure that employees have been safely positioned.

B. After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lockout and/or tagout devices and reactivate machinery using the proper steps to allow energizing of the machine or equipment.

VII. PROCEDURE INVOLVING MORE THAN ONE PERSON (Group Lockout)

A. In the preceding steps, if more than one individual is required to lockout or tagout machines or equipment, each will place his/her own personal lockout device or tagout device on the energy isolating device(s). When an energy isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet. As each person no longer needs to maintain his or her lockout protection, that person will remove his/her lock from the box or cabinet. Each employee in the group must review the lockout/tagout procedure to be used.

VIII. OUTSIDE PERSONNEL (SUBCONTRACTORS, ETC.)

A. Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of the Lockout/Tagout Procedure, the COTR will make contact with the subcontractor and each will inform the other of their respective lockout or tagout procedures. If differences exist, a mutually agreeable procedure will be established prior to servicing or maintenance.

IX. REFERENCES

29 CFR 1910.147 - The Control of Hazardous Energy (Lockout/Tagout)